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FOREST PEST MANAGEMENT
Pacific Southwest Region

Report No. 85-24

3430 Evaluation
September 20, 1985

WESTERN DWARF MISTLETOE ON ALAMO MOUNTAIN, MT. PINOS RANGER DISTRICT, LOS PADRES NATIONAL FOREST

PSW FOREST AND RANGE EXPERIMENT STATION
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John Pronos, Pathologist

ABSTRACT

Alamo Mountain was inspected for western dwarf mistletoe infecting Jeffrey pine. This pest is seriously impacting pines in many locations and needs to be a standard consideration in the management of this recreation area. A detection survey is required to delineate infested acres and to gather information for use in choosing treatments.

BACKGROUND AND OBSERVATIONS

Dwarf mistletoe infested stands on Alamo Mountain were inspected by Tim Sutton and Debbie Yeast, Mt. Pinos Ranger District, and John Pronos, Forest Pest Management, Regional Office. The purpose of the visit was to gain an overview of the mistletoe situation and discuss opportunities to deal with the pest.

Alamo Mountain includes over 2,000 acres of forest, predominately Jeffrey pine with some sugar pine and white fir. Sugar pine and fir grow well in a few locations, but not at all in most. Much of the overstory was removed, for sanitation and salvage reasons, in the early 1960's. The overstory that was left is now over 150 years old, scattered, and in general infested with western dwarf mistletoe (Arceuthobium campylopodum). The understory, which makes up most of the stocking, is about 70 years old. Tree distribution is erratic and basal areas vary between 180 and 280 sq.ft./acre. The denser stands are obviously overstocked for the quality of site.

Management objectives for stands include retaining the oldest trees and maintaining an uneven-aged character (group selections are normally limited to 2-3 acres). An Environmental Assessment has been prepared for the area and the District is planning treatments that will establish and perpetuate desired tree cover characteristics. Treatments include, but are not limited to, thinning, small patch cuts, and occassional removal of overstory trees.

USDA, FOREST SERVICE, PACIFIC SOUTHWEST REGION
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Much of Alamo Mountain is being impacted by western dwarf mistletoe, with an estimated 100-150 acres severely infested. The worst stands have average mistletoe ratings greater than four, using the Hawksworth 6-class system (copy enclosed). Trees in all age-classes and crown positions are infected. Mortality is scattered and light; we expected to see more considering the amount of mistletoe present. The Jeffrey pine beetle is present but is not attacking trees other than those with heavy dwarf mistletoe. Mortality could become more significant during periods of drought.

DISCUSSION/CONCLUSIONS

The present dwarf mistletoe situation is certainly a product of past land management activities. Leaving infected overstory trees during logging resulted in the rapid spread and buildup of mistletoe within the residual stand. Since the stands have not been entered, except for salvage, for the past 25-30 years, the mistletoe has simply run its own course under conditions ideal for the parasite.

Dwarf mistletoe can be controlled through silvicultural treatments during stand entries. The required treatment depends upon the degree of infestation, and as the disease intensifies over time, the options for effective control are reduced. Also, more radical treatments are required to deal with more severe infestations. For example, from a pathological standpoint, the only practical option to deal with severely infested stands is to clear cut and start over.

Dealing with dwarf mistletoe on Alamo Mountain will not be an easy procedure. Some current management direction is not compatible with effectively reducing disease impact. It is difficult, if not impossible, to maintain thrifty uneven-aged stands for extended periods when both the overstory and understory have dwarf mistletoe. Another complication involves overall Forest objectives. Although the Los Padres Forest is managed for recreation, the uses and characteristics of Alamo Mountain lie somewhere between a developed recreation site and a timber stand, but do not generate the revenue of either.

Listed below are options for dwarf mistletoe control and comments applicable to Alamo Mountain:

1. No action. Dwarf mistletoe will always be present, will intensify, spread to new regeneration, and continue to cause tree mortality. Jeffrey pines usually increase one infection class every 10 years, and most severely-infected trees die within 10 to 15 years. This parasite will not go away or become less damaging if left untreated, but will simply get worse year after year.

2. Overstory removal. A necessary and effective first step to rid stands of dwarf mistletoe in an attempt to establish single story stands. Such treatment is unacceptable in most recreation areas, and also, conflicts with objectives to retain oldest trees in uneven-aged forests on Alamo Mountain.

3. Sanitation thinning. A procedure to reduce mistletoe from single-story stands (also a required second step taken after overstory removal). This is not an effective option if an infected overstory is present, and does not significantly reduce the long-term impact of dwarf mistletoe on recreation sites if only severely infected trees are removed.

4. Stand replacement. Most commonly done by clearcutting and planting, and is often the only practical solution for severely infested stands where dwarf mistletoe has been ignored for decades. The existing limit on size of patch cuts on the District makes this alternative ineffective. For example, if a patch cut is a 2-acre block, and we assume that the mistletoe will spread into the cut block up to 50 feet from infected bordering trees, then one-half of the cut block area will be exposed to immediate reinfection.

Over a long period of time, large severely-infested sites can be converted to uneven aged, disease free stands. Extensive areas clearcut and planted now, would be without dwarf mistletoe, and after a series of future small patch cuts would produce an uneven aged stand with no mistletoe.

5. Species manipulation. Shifting to non-susceptible tree species is an excellent strategy for uneven age stands. On Alamo Mountain white fir and sugar pine are resistant to western dwarf mistletoe; however, not all sites may be suitable for these species.

Another possibility involves planting, on a trial basis, an identified source of dwarf mistletoe-resistant Jeffrey pine. Although the seed is from the central Sierra Nevada, seedlings have been test-planted on the San Bernardino and Cleveland National Forests.

A limited quantity of seed is currently available from Dr. Robert Scharpf, PSW Station, Berkeley.

6. Pruning. A very common technique used, along with tree removal, to reduce the impact of mistletoe in recreation areas, expecially campgrounds. Pruning is not effective unless overstory sources of infection are also removed from adjacent trees. Trees with dwarf mistletoe ratings of 4 or more cannot be properly pruned and are normally removed. In situations where overstory trees are moderate to severly infected but cannot be cut or pruned of all infections, removing only witches' brooms is viable. This will prolong individual tree life, but mistletoe infections will remain in the crown and continue to inoculate nearby trees. Broom pruning accepts the likelihood that understory trees will continue to deteriorate and is normally used where the understory is of little importance or non-existent.

7. Buffer strips. These are areas free of all susceptible host material. They can consist of natural barriers such as openings, meadows, and streams, or they can be man-made. Steps for establishing buffer zones should be included in all control operations to prevent re-entry of the parasite into the treatment area.

RECOMMENDATIONS

The next step in managing for dwarf mistletoe on Alamo Mountain is to complete a detection survey. The objectives for the survey are to map the boundaries of infestation and gather enough information to help make decisions for treatment. Information required includes tree species, dbh, stocking, site index, and mistletoe rating. Once the survey is completed, the priority for treating areas (campgrounds excepted) generally follows the guidelines below:

-lightly infected stands receive the highest priority.

-moderately infected stands are second priority.

-severely infested stands are lowest priority except for stand destruction.

Pest Management may be able to help pay for a survey designed to gather dwarf mistletoe information and for subsequent suppression projects. When funding detection surveys, we assume the Forest and District are committed to use the information to develop strategies for reducing pest impact.

Please contact us (415) 556-6864 if you want more information about:

1. Requests for survey funds (form 3400-2 is required; copy enclosed).
2. Survey design.
3. Obtaining resistant Jeffrey pine seedlings.

Exhibit 1

HAWKSWORTH 6-CLASS MISTLETOE RATING SYSTEM

STEP 1: DIVIDE LIVE CROWN INTO THIRDS.

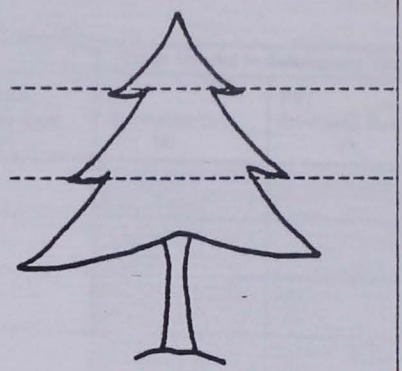
STEP 2: NOW, RATE EACH THIRD SEPARATELY. ASSIGN EACH THIRD EITHER 0, 1, OR 2 AS DESCRIBED BELOW:

(0) No visible infection.

(1) Light - Less than 1/2 of branches have mistletoe plants.

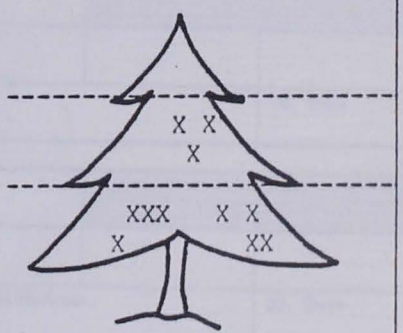
(2) Heavy - More than 1/2 of branches have mistletoe plants and/or brooms.

STEP 3: FINALLY, ADD RATINGS OF THIRDS TO OBTAIN TOTAL TREE RATING.



EXAMPLE

THIS 1/3 HAS NO VISIBLE INFECTION -- Rating	0
LESS THAN HALF OF THIS 1/3 IS INFECTED -- Rating	1
MORE THAN HALF OF THIS 1/3 IS INFECTED -- Rating	2
TOTAL RATING FOR TREE	3



RATING	INFECTION LEVEL
0	None
1 or 2	Light
3 or 4	Moderate
5 or 6	Heavy

A - Forest Service

FOREST PEST MANAGEMENT PROJECT PROPOSAL

(Ref: FSM 3400, Report FS-3400-E)

PART I – REQUESTING OFFICE USE ONLY

egion/Area	2. State	3. Fiscal Year	4. Causal Agent	5. Group	6. Landownership *(x appropriate box)* ☐ National Forest ☐ Other Federal

ype of Project *(x appropriate box)* ☐ Prevention ☐ Suppression	8. Status of Project *(x appropriate box)* ☐ New Project ☐ Continuing Project	9. Host Protected

revention/Suppression Method	11. Pesticide	12. Application Rate

Program Activities (a)	First Year Targets and Costs: Units of Work (b)	Unit Cost (c)	Total Planned Cost (d)	Funds Needed in Subsequent Years: FY: Estimated Cost (e)	FY: Estimated Cost (f)
Pretreatment Survey (Acres)					
Treatment (Acres)					
Volume Treated (MBF)					
Volume Removed (MBF)					
Volume Protected (MBF)					
Post-Treatment Evaluation (Acres)					
Environmental Monitoring (Acres)					
Other (Identify)					
Subtotal					
Indirect and service charges (Field) Percent of Subtotal (%)					
Total Field Costs					

roposed By *(Signature)*	15. Title	16. Date

PART II – REGION OR AREA USE ONLY

egion/Area Indirect and Service Charges ercent of Total Field Costs (%)					
otal Project Costs					

pproved By *(Signature)*	20. Title	21. Project Number	22. Date

PART III – WASHINGTON OFFICE USE ONLY

roject Action *(x appropriate box)* ☐ Approved ☐ Disapproved	24. Total Funds Allocated			

pproved/Disapproved By *(Signature)*	26. Title	27. Date

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